

REMARKS

Claims 1 to 11 have been canceled, claim 12 has been cosmetically amended and claims 21 to 29 have been added. Claims 12 to 29 are now active in this application.

Claims 10 to 13 and 20 were rejected under 35 U.S.C. 102(b) as being anticipated by Fukuda et al. (JP 407074167). The rejection is respectfully traversed.

Claim 12 requires, among other steps, providing a semiconductor device having at least one metal layer completed, then applying a planarizing dielectric layer on top of the semiconductor device and then providing a hydrogen treatment until hydrogen diffuses throughout the semiconductor device. No such steps are taught or suggested by Fukuda et al. Note that Fukuda et al. appears to provide the heat treatment in an atmosphere having a minor component of hydrogen before the formation of a silicon nitride film as a protective film. Claim 12 prior to amendment and even more clearly after amendment requires that the hydrogen be applied after the formation of the first metal layer and the dielectric layer. Claim 12, both prior to and subsequent to amendment, requires that the hydrogen diffuse throughout the semiconductor device, not just in a specific region of the device. No such feature is taught or even remotely suggested by Fukuda et al. It follows that claim 12 both prior to amendment and as now presented clearly defines patentably over Fukuda et al.

Claims 13 and 20 depend from claim 12 and therefore defines patentably over Fukuda et al. for at least the reasons presented above with reference to claim 12.

Claim 13 further limits claim 12 by requiring that the hydrogen treatment include heating the semiconductor device in a hydrogen rich environment. The environment of Fukuda et al. is not "hydrogen rich".

Claim 20 further limits claim 12 by requiring that the semiconductor device undergo the hydrogen treatment after a final layer of the planarizing dielectric layer is added. No such feature is taught or suggested by Fukuda et al. for reasons stated in connection with the argument presented above with reference to claim 12.

Claim 14 was rejected as being unpatentable over Fukuda et al. in view of Wu et al. (U.S. 5,796,150). The rejection is respectfully traversed.

Claim 14 depends from claim 12 and therefore defines patentably over the applied references for at least the reasons presented above with reference to claim 12 since Wu et al. fails to overcome the deficiencies in Fukuda et al. as enumerated above.

In addition, claim 14 further limits claim 12 by requiring that the hydrogen treatment include applying hydrogen in situ by introducing hydrogen as a plasma to the semiconductor device. No such feature is taught or suggested in the combination as claimed.

The allowability of claims 15 to 19 is noted with appreciation.

Claim 21 is identical to claim 12 except for the omission of the step of providing the planarizing dielectric layer. Otherwise, the arguments presented above with reference to claim 12 apply to this claim and are incorporated by reference.

Claims 22 to 29 depend from claim 21, are identical to claims 13 to 20 respectively except for their dependency and define over the cited references for the reasons presented above with reference to the corresponding claims which depend from claim 12 or are allowable for the same reasons as the corresponding claims previously noted to be allowable.

In view of the above remarks, favorable reconsideration and allowance are respectfully requested.

Respectfully submitted,



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